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Fig. 29. Milking a cow. The calf is attached to a tree by means of a cord (*témetrek*) around its neck, the mother cow being attached to the same tree with a cord (*aṛan*) around its horns.
Ayr, Tuareg of the *Kel Ferwan* group.

233 Zebus are able to cross the barren desert country of the Sahara in winter, and even with so hot a temperature, as that prevailing at the end of April, I have met Ayr Tuareg of the *Kel Tédalé* tribe leading zebus from Northern Ayr to Tamaṛaset in Ahaggar.

The Ayr Tuareg seem to admit that they have always had zebus, but they say that in the past they had very few cattle. Nowadays there are zebus in so to speak all camps and villages of the Massif and in the plains to the west of it. At the village of Iferwan sedentary farmers possess three to four animals per household, and figures are much bigger for households of true pastoralists. It is quite normal for a nomadic household to possess a dozen zebus, and this is true even of pastoral Tuareg roaming in the northern outskirts of Ayr where precipitation is lower than in the south.

In fact zebu-breeding is a very profitable industry to the nomads, the more so as very little work is connected with it. The animals leave the camp early in the morning to return again entirely by themselves in the evening before darkness. They are never accompanied by herdsmen as there are no beasts of prey strong enough to attack them nowadays. I have met Tuareg who were evidently very fond of their zebus, but they never showed the same interest towards their cattle as do the Fulani, who always accompany their herds. During grazing Tuareg zebus normally roam freely, but certain animals which are difficult to get hold of are provided with a cord (*aṛan*) around their horns to which cord is attached a long piece of wood trailing on the ground. When oxen are driven to the market place (at Agadez or Ingal) for selling,

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bridge of the nose of a calf, so that it hurts its mother when it tries to suck (Cauvet 1925, I, p. 359). – (3) *akimbab*, that is a plaited muzzle which allows the calf to graze, but prevents it from sucking. I have been told both in Ahaggar and Ayr that such muzzles are used for camel calves, but apparently they do not constitute a normal weaning method. – (4) *asedres* or *ameru* are said to be synonymous terms for the weaning method generally adopted among the *Kel Ferwan* Tuareg of Ayr. The method is as follows:— The upper lip of the calf is pierced on both sides of the harelip so characteristic of all camels. A piece of thin root of the *afagag* acacia (*Acacia Raddiana*) is drawn through these holes so that the ends of the root protude at both sides, and a knot is made at both ends that the root will not fall out. These knots hurt the udder of a she-camel when the calf starts to suck, but this is not the real idea of the device. For the root-piece keeps the pierced holes open and the calf is therefore unable to suck at all.

A she-camel may yield about ten litres of milk at the beginning of its lactation period, but at the end of this period it does not yield more than two or three litres even with good grazing. The yield is always dependent on grazing conditions. Thus during my stay in Ahnet and Ahaggar 1954–55, a Tuareg who owned about twenty she-camels acquired only two litres of milk a day in all from these animals. But conditions of camel-breeding are much better in Ayr and in the southern plains where she-camels are tolerably good milk-yielders most of the year, and camel's milk is therefore very important to some pastoralists of these regions. Camel's milk is drunk and not generally used for food in other ways. It is much esteemed by all Tuareg, who claim that it possesses a particular power and gives strength. It is never stored in the shape of butter or cheese. The Tuareg of Ahaggar and Ayr never eat camel's butter which they consider possesses a poor taste, and, besides, it is very difficult to churn. They make butter of camel's milk only when butter of milk from other domestic animals is lacking for the greasing of the hair. Both in Ahaggar and in Ayr butter is then churned by the men in a rather peculiar way:— A skin bag containing an amount of camel's milk is attached to the riding saddle of a camel which is then ridden at very fast speed for some time. But even with this method, it is said, camel's milk gives very little butter, and it is also definitely stated that the milk cannot be used for cheese-making. These Tuareg statements seem to be confirmed by analyses of veterinaries, who claim camel's milk to contain very little casein, and it has been proved difficult to separate butter from camel's milk (cf. Cauvet 1925, I, p. 707 ff.).

She-camels can mate and yield milk until an age of about 25, and their average length of life is estimated by the Tuareg at about 30 years. But pastoral Tuareg do not generally keep their camels until they die a natural death. In Ayr I was told that she-camels more than twenty years old should be sold or killed. Most Tuareg sell their old camels in the oases of the Central or Northern Sahara where a large population of sedentary farmers is constantly yearning for meat. Very few camels are killed by the butchers of Agadez, where meat from oxen, sheep, and goats is always available and fairly cheap, but a great many old camels are slaughtered at the market places of the oases further north.

Pastoral Tuareg of Ayr very rarely kill their own camels to eat them. They will slaughter a camel which suffers from some severe disease as all animals dying by accident or from disease are unlawful to eat. However, there are also some Ayr Tuareg who will never eat camel's meat. They say that they would feel very sick at heart were they to do so, and some Tuareg even say that they would vomit

Caravan Trading

Caravan trading of the Sahara has suffered severely from the European colonisation of Northern Africa. The establishment of ports and railways in the Sudanese area and the abolition of the slave-trade have brought to an end the large caravans passing through the desert. In recent times another heavy blow has been struck against the caravans, for transportation is more and more taken over by trucks which can easily pass through the open desert country. Many pastoralists of Northern Africa suffer from the decline of their trade, which for centuries has been an important stabilizing factor for their subsistence. The decline of caravan trading is also strongly felt in the oases, which have played a very important part as trading posts or trading stations. Some of these oases have far fewer inhabitants nowadays than in the past, and it is most difficult for many sedentary people of the oases to exist. The decline of the trade has been felt also among the pastoral Tuareg. But caravan trading is still important to most of them, and many of them could not support life without it. To understand the important role of caravan trading we have once more to return to the economic values of subsistence activities.

CARAVAN TRADING OF THE AHAGGAR TUAREG

The Ahaggar Tuareg cannot live exclusively on stock-breeding products all the year round – not even in good years when annual pasture is well developed in autumn and early winter. Even in a good year the nomads mainly eat vegetable food throughout the hot season, and some bread or porridge is also consumed during the period of abundant milk yields. It is true that nomads can subsist entirely on milk for long periods, and that some people do so for weeks or even months. Galan says that pastoralists of of Ahaggar, when they live entirely on milk, can do with four litres a day per person (Galan 1951, p. 231). But it is estimated by the Ayr Tuareg that they need about eight or ten litres a day to live entirely on milk, and they all claim that they get weary from constant milk drinking. They say that though they do not feel hungry when they live exclusively on milk they experience a peculiar, unpleasant feeling in the stomach. The relative importance of stock-breeding products (mainly milk) and vegetable food (mainly wheat, millet, and dates) may be seen from the diagram Fig. 151.[1] In a good year there is normally some possibility of collecting wild seeds for bread and porridge, but the Tuareg claim that they cannot easily cover their need of vegetable products even in a year when milk is abundant. And milk is not always abundant. We can estimate that for two or three good years

[1] [cf. p. 216] [p. 209]

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Fig. 149. The market place of Agadez. In the front negroid Hausa men roasting small pieces of meat on a spit; in the background Tuareg camels offered for sale.

pack-camels to the salt pit of Amadror to mine salt in the hot season. They load the camels with salt and bring them to the camp where further preparations for the journey are made. When the caravans have started southwards they stop in the Tamesna plains and rest there for at least one month to allow the pack-camels to feed on annual pasture, and, if necessary, to exchange the pack-camels with others kept by the Ahaggar Tuareg in Tamesna. Thereupon the caravan will continue towards the millet-growing towns and villages of the Sudan to bargain with the Hausa. The caravan returns to Ahaggar again at the end of March or at the beginning of April, so that the total duration of a south-bound caravan is up to six or seven months.

The Sudanese millet trade is of extreme value to the subsistence of the Ahaggar Tuareg. It is particularly important to their economy that they obtain millet for non-nomadic products transported by camels, which are mainly bred outside of Ahaggar. The millet trade is consequently not much influenced by Ahaggar's changeable climate. According to official statistics, the Ahaggar caravans in 1946 exported 375 tons salt, and imported 720 tons millet, while the cereals grown in Ahaggar amounted to 197 tons (cf. Malaurie 1953, p. 344). According to Galan vegetable food grown in the gardens of Ahaggar in 1950 (a bad year) amounted to 121 tons wheat, 5 tons millet and barley, and 4 tons of tomatoes – about 10 kg of wheat and 0.5 kg of millet, barley, and tomatoes per person (Galan 1951, p. 233). We see from this that the amount of cereals acquired in the Sudan far exceeds the amount grown in Ahaggar, and as we have mentioned, the millet trade is also important for the establishment of Tuareg agriculture in their own country where this cereal is used for payments to cultivators. It can also be added that the Sudanese caravan trade is more important to the Tuareg than appears from the figures above. For salt is much more valuable than millet, and for one load of salt the Tuareg receive from four to fifteen loads of millet – in 1946 the price was fifteen to one (cf. Malaurie 1953, p. 344). It is evident that the Tuareg could not take all this millet back to Ahaggar. Most of it is re-sold

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433 439 in the Sudan for such articles as camel saddles, sandals, swords, millet mortars, indigo cotton, earthenware pots, and the like. The Tuareg may also buy quantities of butter and cheese for sale to the sedentary people of Tidikelt and for their own use in dry years.

The Sudanese trade constitutes the great stabilizing factor in the economy of pastoral Tuareg of [262] Ahaggar. In return for the valuable rock-salt, pastoral Tuareg obtain the bulk of their agricultural food products (millet), butter and cheese for their own consumption in dry years, many important artefacts and notably their camel saddles and their millet mortars. They also get a surplus of millet and goods for investment in their Ahaggar gardens and for selling to the sedentary people of the Tidikelt oases.

There are certain Tuareg who do not engage in the Sudanese salt trade, notably those living in Ahnet; and these Tuareg nowadays have no irrigated gardens either. They acquire their necessary vegetable food products from Tidikelt (dates) and from Abalessa and Tamanṛaset (wheat). They buy these vegetable products with their surplus of goats, sheep, camels, butter and cheese, and an occasional [511] barbary sheep. In a good year they can meet their needs of food in this way, but it is most difficult for them to subsist in dry years; and it may happen that two dry years come in succession. When I [114] stayed among the Ahnet Tuareg in 1954–55, all camps visited were very short of food, while the Tuareg of the Ahaggar Massif who engage much in the salt trade (the *Dag Ṛali* and the *Aguh-en-tehlé*) possessed what they needed of wheat, barley, dates, and millet.

● [346] To-day there is a rather important market at Tamanṛaset where many Tuareg sell surplus livestock, and where they can also buy cereals and dates. But it is always profitable to sell livestock and meat [435] in the Tidikelt oases where meat, butter and cheese are very expensive articles. Dates are cheap in these 000 oases, European goods and woven blankets are also cheaper than at Tamanṛaset. The trading expedi-

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Fig. 150. Wooden measure (*muda*) which contains one kilo of cereals, or the like. The Tuareg have adopted the kilogramme into their own weight system. The proper Tuareg unit is the *taziwa* which, according to Foucauld, corresponds to three kilogrammes (Foucauld 1951–52, III, p. 1160), but nowadays the Ahaggar Tuareg count one *taziwa* as equal to two kilogrammes and a half. The Tuareg have wooden or metal measures of *taziwa* size, and there are also larger measures to be used for grain, dates, and the like. For units smaller than *muda* the Tuareg sometimes use a wooden measure called *tamaṛast* which holds half a kilogramme. Smaller quantities are measured with the hand held half open, and it is recognized in Ahaggar that one *taziwa* corresponds to 99 handfuls. In Ayr it is very common to use a little plaited bowl (*téfakemt*) as the smallest unit of measurement. Dimension: 0.140 m high, 0.125 m in diameter at the rim. (F.M. 168).

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tions have remained important to the Ahaggar Tuareg, and it is clear that they would not go on trading were these expeditions not profitable, for trading expeditions are extremely strenuous. Though the expeditions set off when the extreme heat is decreasing, it is still very hot in the extensive barren plains in autumn and in winter during daytime. Water and pasture are often extremely scarce in this deserted country, and the Tuareg frequently have to travel rapidly. For days or weeks they live so to say on their camels, and if camels are not too heavily loaded they may do up to 16 hours a day for several days in succession. Under such journeys the Tuareg eat only once a day. Obviously such trading expeditions are also very hard on the pack-camels, and there is always a risk of loosing a camel during such journeys through barren, desert country.

In this brief outline of caravan trading I have not considered those Ahaggar Tuareg living constantly in the Tamesna plains and adjacent regions. These Tuareg own more livestock than the Tuareg of the Ahaggar Massif, and I do not believe that they engage so much in extensive trading expeditions. They are comparatively rich in she-camels which are tolerably good milk yielders in these regions most of the year, and milk is more important as food than it is in Ahaggar. I believe that most Ahaggar Tuareg of the Tamesna region acquire their necessary vegetable products by selling surplus livestock, butter and cheese at the markets of Ingal and Agadez.

CARAVAN TRADING OF THE AYR TUAREG

Among the Ayr Tuareg stock-breeding products are far more important for food than in the north. Grazing conditions are better with annual pasture as a recurrent event, and the Tuareg keep bigger flocks of goats and sheep, larger camel herds, and most have a few zebus which are guarded without much difficulty. The *Kel Ferwan* Tuareg of Southern Ayr can live on milk for a large part of the year, though they, like those of Ahaggar, become tired of milk drinking if they get no solid food. There are Tuareg of Southern Ayr who live exclusively on milk for two or three months during the periods of *akasa* and *rarat* and to whom milk is important as food for at least six months. In the extremely hot season of *ewilen* when milk is very scarce most Tuareg eat millet porridge with a little milk or sauce (cf. p. 242 f.), and Tuareg who are not very wealthy eat millet porridge to a great extent all the year round, so that the necessary amount of millet for many camps is about 0.5 kilo a day per person, or about 180 kilos a year. In Ayr there are fairly good possibilities of collecting if there are not too many locusts, but most Tuareg do not collect a great quantity of wild seeds, and claim that they would be very badly off without millet, as seeds of wild plants are not very nourishing in comparison. In one year during the second world war (in 1943) they say that millet was very hard to get; it was then very difficult to subsist and a great many animals had to be killed for food. Millet is almost indispensable to the Tuareg; they also consume other vegetables derived from agriculture, notably wheat, maize, and dates, but millet is the most essential non-nomadic food product. Normally it can be acquired by most Ayr Tuareg without much difficulty.

The people of Ayr obtain their provisions of millet from the Sudanese area of shifting cultivation, notably from Damergu (Tanut). Millet can also be bought at Agadez whereto it is brought by Tuareg

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may be seen in Fig. 167a–b illustrating baskets used for the manufacture of butter-milk cheese in Ahaggar. True coiled basketry is sewn with a little awl (*tistent*) (Fig. 218a).

The technique of coiled basket work is used in the manufacture of a great many receptacles among the Tuareg of Ahaggar, and coiled basketry made and utilized by these Tuareg can be seen in Figs. 184, 185, 196a–c, 210a–b.

The Ayr Tuareg apparently do not make coiled basketry to a very great extent, but they know a technique related to that used in Ahaggar, and also sew with a small awl (*ésan*). The reason why so many Ayr pastoralists make very little coiled basketry work probably lies in the fact that plates, bowls, and other receptacles of this type can be obtained at the market of Agadez at very low prices.

In the manufacture of plaited basketry the Ayr Tuareg are experts. They use the leaves of the dum palm for plaiting a great many different articles such as tent-mats, containers, and the like. When large mats and similar objects are made, the palm leaves are always plaited into narrow bands which are sewn together with pieces of leaves by means of a large needle (*tasubla*) (Fig. 220b). Plaiting dum palm leaves is one of the most important tasks of women among the *Kel Ayr*. Pastoral Tuareg of Ahaggar in contrast to those of Ayr do not engage much in plaiting basketry, and I believe that most of them are unaware of this technique which is known to all sedentary agriculturists of Ahaggar. The plaiting material used by these people is date palm leaves (*aɣum*) from which they make mats, bags, and similar objects. Baskets (*alegutguten*) like that reproduced Fig. 211 are manufactured by sedentary agriculturists of Abalessa and are sometimes used by pastoral Tuareg. Another type of plaited basket is that illustrated Fig. 135. It is made from palm leaves and has two handles made from palm bast twisted into a rope which is sewn into the basket by means of the large needle (*tasugla*, or *tasubla*) (Fig 220b). This basket type (*tésenit*) is widely found throughout Northern Africa among sedentary people of the oases and in the Atlas. The sedentary agriculturists of Ahaggar use baskets of this kind for many different purposes, and they play a part in agricultural work, e.g., to carry fresh soil to the gardens (p. 191) and to remove soil when digging and cleaning out foggara canals.

The Tuareg have a third technique which can adequately be mentioned in connection with plaiting, namely the manufacturing of mats from the stems of the *afezu* grass (*Panicum turgidum*). These mats are made from straws placed parallel to each other and fixed together by means of strips of leather. These mats are known as *éseber* or *tésebert* according to their use and size. They play an important part in Ahaggar where they are used as a kind of windscreen surrounding all tents; and they are manufactured by many women among the *Kel Ahaggar* (Figs. 268, 269). Mats of this type are also made by some Ayr Tuareg for cheese manufacturing (Fig. 168), but Tuareg women of Ayr practise very little this particular technique of mat making. Large mats made from *afezu* stems are used for bed covers and in rare cases also for windscreens or sunshades, but these mats, which are found in all Tuareg camps together with the large wooden bed (*téḍabut*) (Fig. 212a–b), are not manufactured in Ayr but in the south, particularly by women of the *Iɣdalen* Tuareg. Mats manufactured by this method are used for an interior cover of the barrel-vaulted mat-tent (Fig. 265d); these mats are also imported from the south.

The Tuareg are expert at skin and leather work which constitues the most important craft in the